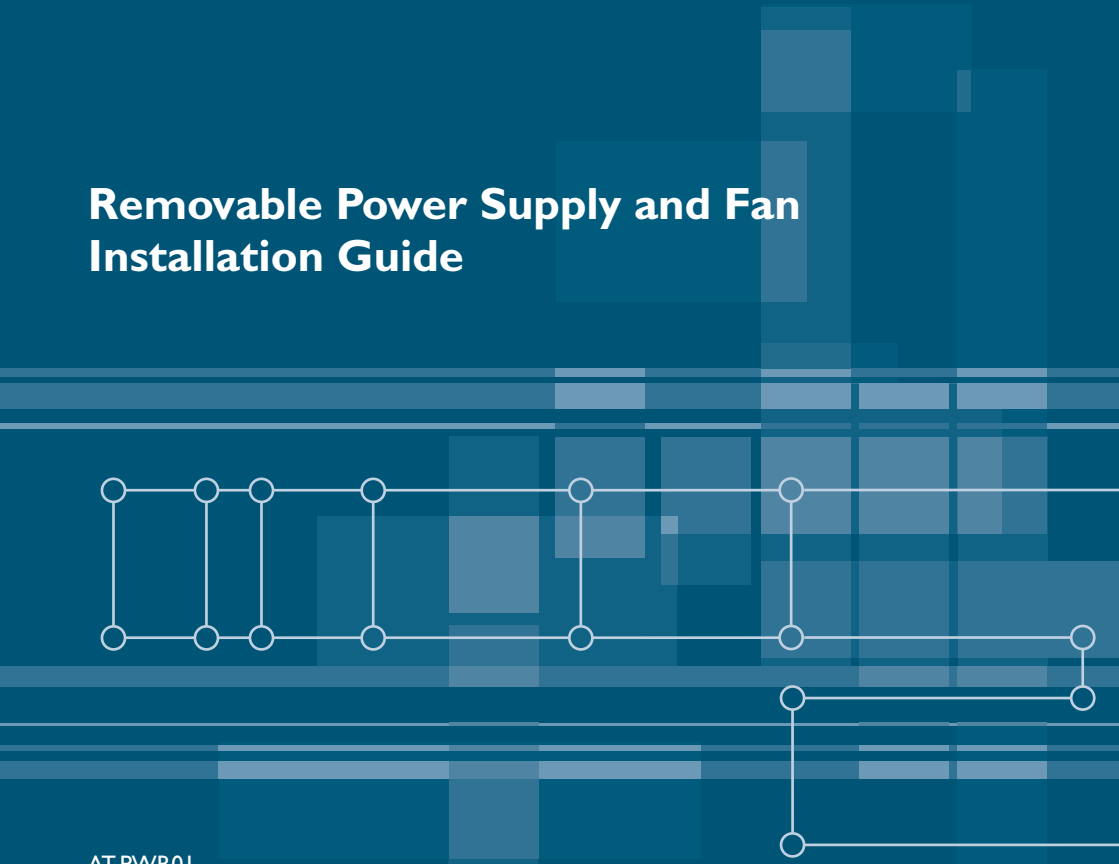
Removable Power Supply and Fan Installation Guide



AT-PWR01
AT-PWR02
AT-PWR05
AT-FAN01
AT-FAN03

Allied Telesis™

Removable Power Supply and Fan Installation Guide

AT-PWR01
AT-PWR02
AT-PWR05
AT-FAN01
AT-FAN03

Download the complete document set from
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Removable Power Supply and Fan Installation Guide
Document Number C613-04057-00 REV J

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About this Guide

This Installation Guide describes how to install the following PSUs and fans:

- AT-PWR01 PSU, either AC or DC power supply unit
- AT-PWR02 PSU, AC only
- AT-PWR05 PSU, AC only
- AT-FAN01, fan-only module
- AT-FAN03, chassis fan module

Compatible Switches

The following table shows which models of PSUs and fans are appropriate for individual switches.

Switch	PWR01	PWR02	PWR05	FAN01	FAN03
AT-8948	✓			✓	
x900-48FE	✓			✓	
x900-48FE-N	✓			✓	
x900-48FS		✓		✓	
AT-9924T	✓			✓	
AT-9924SP	✓			✓	
AT-9924Ts	✓			✓	
x900-24XT	✓			✓	
x900-24XT-N	✓			✓	
x900-24XS	✓			✓	
AT-10408XP		✓		✓	
SwitchBlade® x908			✓		✓

You can download complete documentation for these switches from www.alliedtelesis.com/support/software. For more information about the documentation and other resources, see "Obtaining Documentation and Resources" on page 16.

Package Contents

Depending on the model, switches are shipped with a single supply unit (PSU), either AC or DC. Some models also have fan-only modules (FOM), chassis fans, or blanking plates.

- The AT-8948, AT-9924Ts, x900-24XT, x900-24XT-N, x900-24XS, and AT-10408XP switches have a PSU and a FOM installed.
- The x900-48FE, x900-48FE-N, x900-48FS, AT-9924T, and AT-9924SP switches have a PSU and a blanking plate installed.
- The SwitchBlade® x908 is shipped with dual chassis fans and blanking plates, but no PSUs.

The following items are included with each factory-installed PSU. Contact your authorised Allied Telesis distributor or reseller if any are damaged or missing.

- one AC power cord (AC models)
- one power cord retaining clip (AC models)
- one warranty card

The following items are included with PSUs when purchased separately:

- one AC power cord (AC models)
- one power cord retaining clip (PWR01 and PWR02 AC models only)
- one clip-on ferrite core (PWR05 only)
- this Installation Guide
- one warranty card

The following items are included with fans when purchased separately:

- this Installation Guide
- one warranty card

Installing a Power Supply Unit or Fan

Use these instructions to install PSUs, chassis fans and FOMs.

- Do not combine PWR01 and PWR02 PSUs in the same switch.
- Do not combine AC and DC PSUs in the same switch.

Before you begin

- Read the safety information for the switch.

  Safety information is in the *x900 Series Switch and SwitchBlade® x908 Installation and Safety Guide* or the *AT-10408XP Installation Guide*. You can download these documents from www.alliedtelesis.com/support/software.

- Gather necessary tools and equipment.

  No special tools are required to install PSUs or fans since they have captive thumbscrews. However, you may need an appropriate screwdriver to tighten or loosen them.

- Verify the package contents if you have not already done so.

  See "Package Contents" on page 5. Contact your authorised Allied Telesis distributor or reseller if items are damaged or missing.

- Remove the unit from its packing material in an anti-static environment.

Caution Follow correct anti-static procedures. Failure to do so could damage the PSU, fan, or switch. If you are unsure about correct procedures, contact your authorised Allied Telesis distributor or reseller.

Caution When adding or replacing power supplies, keep your hands and fingers out the power supply bays. After installing a PWR05 power supply, use a screwdriver to tighten the captive screw such that a screwdriver will be required to remove the PSU at a later date.

Installing a PWR01, PWR02, or FAN01

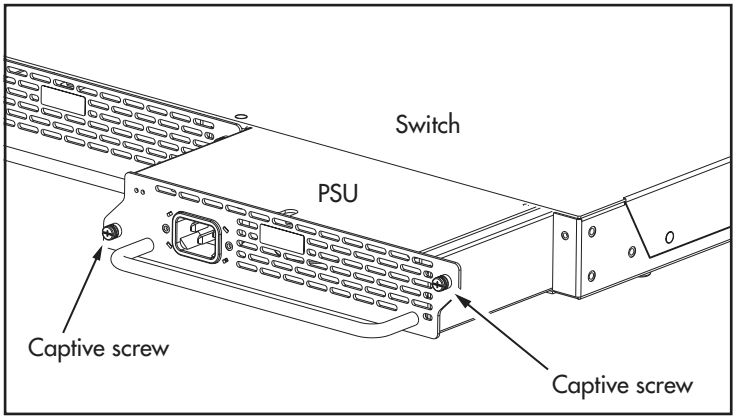
1. If you are replacing a PSU, disconnect the power cord from the current one before removing it.

   For AC PSUs, turn off the main power source to the PSU and disconnect the power cord.

   For DC PSUs, push the Run/Standby control and release it to the Off position. When the Run/Standby control is not depressed, it is off. Disconnect the supply cable wires from the circuit breaker.

2. Remove the current PSU, fan, or blanking plate from the switch.

   Loosen the captive screws until fully loosened.



   If a unit is already in the bay, slide it out slowly and carefully. Support the unit from underneath as you remove it to prevent it from falling.

   Cover empty bays with a blanking plate because dust and debris could overheat or damage the unit and switch.

3. Insert the new PSU or fan unit, and carefully slide it into the bay.

   Insert it slowly, being sure to keep it straight. Firmly press the unit until the faceplate engages, or nearly engages, the chassis. Forcing a misaligned unit into the bay is likely to damage both the unit and chassis.

   Note that when you have only one PSU installed in the AT-9924T and AT-9924SP switches, it must be installed in bay 2 to optimise cooling.

4. Secure the unit in the switch by tightening the captive screws on the faceplate.

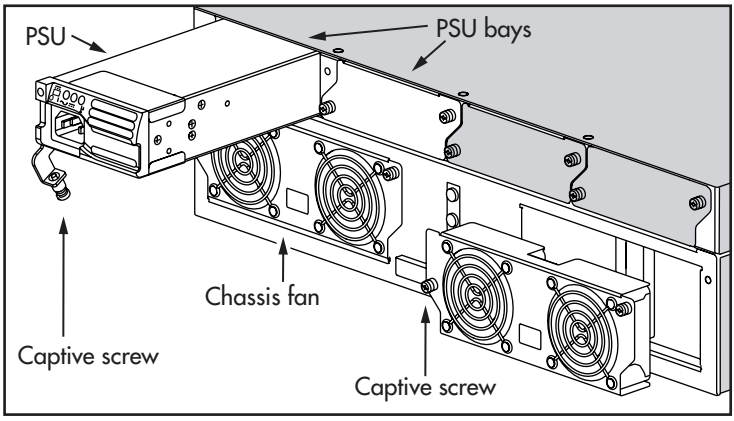
Installing a PWR05 or FAN03

1. If you are replacing a PSU, turn off the main power source to the PSU and disconnect the power cord before removing it.

   The DC earthing connection is not necessary for the SwitchBlade x908 when using AC PSUs because the chassis is grounded through the power cords.

2. Remove the current PSU, fan, or blanking plate from the switch.

   Using a screwdriver, loosen the captive screw(s) until fully loosened.



   If a unit is already in the bay, slide it out slowly and carefully. Support the unit from underneath as you remove it to prevent it from falling.

   Avoid the spinning blades on chassis fans. Contact may cause personal injury or damage the unit.

   Cover empty bays because dust and debris could overheat or damage the unit and switch. Do not operate the switch for extended periods without functioning chassis fans. Doing so will cause the switch to overheat and shut down, and may damage the switch.

3. Insert the new PSU or fan unit, and carefully slide it into the bay.

   If you are installing a PSU, unlock the latch on the PSU first by loosening the captive screw.

   Insert the PSU or fan unit slowly, being sure to keep it straight. Firmly press the unit until the faceplate engages, or nearly engages, the chassis. Forcing a misaligned unit into the bay is likely to damage both the unit and chassis.

4. Secure the unit in the switch by tightening the captive screw(s) on the faceplate. On the PWR05, use a screwdriver to tighten the captive screw such that a screwdriver will be required to remove the PSU at a later date.

Connecting an AC power supply

Follow these instructions to connect an AT-PWR01, AT-PWR02, or AT-PWR05 AC PSU to an AC power supply:

Warning The AT-PWR01 AC PSU has a fuse rating of 250V, 5A for FH101 and FH102.

Warning The AT-PWR01 AC PSU has double pole/neutral fusing. Electric shock is possible since there are dual primary fuses, one on the phase circuit and one on the neutral circuit. If the neutral opens, the phase may still be live.

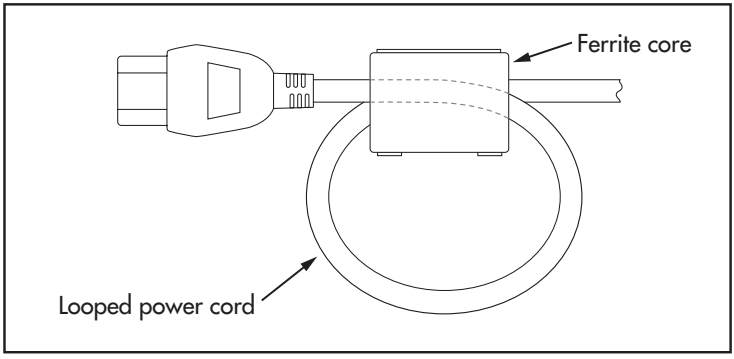
Warning For SwitchBlade x908 AC models the grounding stud on the rear of the unit is for supplemental grounding only. The system must be supplied by a grounded 3 wire AC source through the power supply cord.

Connecting a PWR01 or PWR02

1. Plug the supplied AC power cord into the power inlet on the PSU and attach the retaining clip.
2. Connect the power cord to the main power source.
3. The PSU LED on the front panel of the switch lights green. If the LED does not light, refer to the Hardware Reference for troubleshooting information.

Connecting a PWR05

1. Form a loop in the supplied AC power cord at the PSU end and clip the ferrite core over the looped cord, as shown in the following illustration. This keeps the ferrite core in its correct position, close to the PSU.



2. Plug the AC power cord into the power inlet on the PSU.

3. Connect the power cord to the main power source.
4. Set the Run/Standby switch to Run.
5. The PSU LED on the front panel of the switch lights green. If the LED does not light, refer to the Hardware Reference for troubleshooting information.

Connecting a DC power supply

Follow these instructions to connect an AT-PWR01-80 DC PSU to a DC power supply. Only trained and qualified personnel should connect a DC power supply.

You need an appropriate DC power source, DC supply cable, ring connectors, a crimp tool and an appropriate screwdriver to tighten the terminal screws.

For centralised DC power connection, the switch should be installed in **restricted access areas only** (such as dedicated equipment rooms or equipment closets) in accordance with Articles 110-16, 110-17, and 110-18 of the National Electrical Code, ANSI/NFPA 70.

Power supply specifications:

- 40 to 60V, 48V nominal
- supports either positive grounded or negative grounded operation
- a 15Amp certified/listed circuit breaker is required for circuit protection

Supply cable specifications:

- three-core cable is required
- minimum core size: 3.3mm^2 (12 AWG) high strand count copper wire
- minimum cable rating: 600V, 90 degrees C

Warning Disconnect the power supply cable before starting this procedure.

1. Remove the transparent protective terminal cover.
2. Strip the supply cable wires to expose 7.5mm (0.31 in.) of bare conductor. Terminate the wire with a nylon insulated solderless ring tongue terminal, JST FN5.5-5 or equivalent, using a crimp tool.
3. Connect the ground wire to the ground terminal. Use the diagram on the rear panel of the switch to identify terminals. Tighten the terminal to between 2.4 and 4.0 Nm (21.3 and 35.4 lbf in).

Caution Check that the PSU terminals are wired to the correct polarity. You will damage the PSU if you incorrectly connect it.

4. Connect the positive feed to the + (positive) terminal and the negative feed to the - (negative) terminal. Tighten the terminals to between 2.4 and 4.0Nm (21.3 and 35.4 lbf in).

   Note that the DC return input terminal must be connected as an Isolated DC return (DC-I).

5. Ensure there are no exposed cable strands.

6. Replace the cover. You **must** replace the transparent plastic terminal cover before continuing.

7. Secure the supply cable to the rack framework or a similar object to ensure that connections are isolated from any force applied to the cable.

8. Ensure the circuit breaker for the supply circuit and the Run/Standby control on the PSU are **off**. Press and release the Run/Standby control so that it is not pushed in (which is the Off position).

9. Connect the supply cable wires to the circuit breaker.

10. Turn on the PSU by pushing in the Run/Standby control.

11. Confirm that the switch is receiving power.

    Check that at least one of the PSU LEDs on the front panel of the switch is lit green. If no LEDs light, refer to the Hardware Reference for troubleshooting information.

Checking LEDs

LEDs on PSUs, fans, and the front panels of switches indicate the operational status of the devices. After you have installed a PSU or fan and have powered on the switch, check the LEDs to verify operation by using the following tables.

PWR01
PWR02

The following table describes LEDs on the PWR01 and PWR02 power supply units.

LED	State	Description
FAULT	Red	The temperature on the PSU has exceeded the limit of 75° C (167° F), or the fan failed.
PWR GOOD	Green	A PSU is installed in the switch and is delivering power.

PWR05

The following table describes LEDs on the PWR05 power supply unit.

LED	State	Description
~	Green	AC input voltage is within 90-264VAC, 47-63Hz.
	Off	AC input voltage is outside the acceptable range.
⎓	Green	DC output voltage is within 12V +/- 10%.
	Off	DC output voltage is outside the acceptable range.
	Red	A fault has occurred. There is either a fan failure, or the temperature has exceeded its limit of 70°C (158°F).
	Off	No fault conditions detected.

FAN01

The following table describes LEDs on the FAN01 fan-only module.

LED	State	Description
FAULT	Red	The fan has failed.

FAN03

The following table describes LEDs on the FAN03 chassis fan.

LED	State	Description
FAN STATUS	Red	The fan has failed.

Switch

The following table describes how LEDs on the switch report operations and faults with installed PSUs and FOMs.

LED	State	Description
PSU 1 and PSU 2	Green	The PSU is installed and supplying power to the switch. The voltage output is within specification.
	Red	One of the following: • The PSU is installed in the switch, and a fan has failed or the PSU has exceeded its recommended temperature threshold of 70°C (158° F). • A FOM is installed in the switch and a fan has failed. The x900-12XT/S and the SwitchBlade x908 switches do not support FOMs. • The bay is empty. Applies to AT-8948, AT-9924Ts, x900-24XT, x900-24XT-N, x900-24XS, and AT-10408XP switches which require a FOM when only one PSU is installed. • Dual PSUs are installed, but the PSU is not receiving power.
	Off	A FOM is installed and operating at an acceptable speed. For AT-9924T, x900-48FE, x900-48FE-N, x900-48FS, and SwitchBlade x908 switches, a blanking plate is installed.

Troubleshooting

If the PSU does not function as expected:

- check that all cable connections are correct and secure.
- check that the standby switch has been pressed and is in the On position (DC models).
- check that the PSU is receiving the correct AC voltage (AC models).
- if LEDs indicate a PSU fault, replace the PSU or have your authorised Allied Telesis distributor or reseller service it.

Troubleshooting information is also in the *x900 Series Switch and SwitchBlade® x908 Hardware Reference* and the *AT-10408XP Installation Guide*. You can download these documents from www.alliedtelesis.com/support/software.

Obtaining Documentation and Resources

The complete document set for x900 Series switches and SwitchBlade x908 includes:

- this Installation Guide
- the *x900 Series Switch and SwitchBlade® x908 Installation and Safety Guide*, which describes how to install the switch and includes important safety and statutory information
- the *x900 Series Switch and SwitchBlade® x908 Hardware Reference*, which contains detailed information on x900 Series and SwitchBlade x908 switches and their hardware features
- the *x900 Series Switch and SwitchBlade® x908 Expansion Module Installation Guide*, which describes how to install expansion modules in x900 Series and SwitchBlade x908 switches
- the *AT-9900s Series Switch Expansion Module Installation Guide*, which describes how to install expansion modules in AT-9900s Series switches
- the *x900 Series Switch AlliedWare® Operating System Software Reference*, which contains detailed information on configuring switches running the AlliedWare® operating system
- the *AlliedWare Plus™ Operating System Software Reference*, which contains detailed information on configuring switches running the AlliedWare Plus™ operating system

The complete document set for the AT-10408XP switch includes:

- this Installation Guide
- The *AT-10408XP Installation Guide*, which describes how to install the switch, along with details about the switch and its hardware features. This guide also contains important statutory and safety information.
- The *AT-S83 Management Software Command Line Interface User's Guide*, which contains detailed information on configuring the switch.

You can download these documents and updates from www.alliedtelesis.com/support/software.

You need Adobe® Acrobat® Reader® software to view, search, or print these documents. You can download it from www.adobe.com.

Other resources

How-To Notes describe a range of standard Allied Telesis solutions, and include technical tips and guides to configuring specific hardware and software features. You can download the latest How-To Notes from www.alliedtelesis.com/resources/literature/howto.aspx.

MIBs supported by Allied Telesis products can be downloaded from www.alliedtelesis.com/support/software.

Microsoft® Visio® stencils for Allied Telesis products can be downloaded from www.alliedtelesis.com/resources/images/visio.aspx.

AT-TFTP Server for Windows is a TFTP (*Trivial File Transfer Protocol*) server for transferring software versions, configuration scripts and other files between a PC and the switch. You download AT-TFTP Server from www.alliedtelesis.com/support/software.

CD-ROM

Some products also ship with a CD-ROM containing documentation and resources.

Contacting us

With locations covering all of the established markets in North America, Latin America, Europe, Asia, and the Pacific, Allied Telesis provides localized sales and technical support worldwide. To find the representative nearest you, visit us on the Web at www.alliedtelesis.com.

Standards

Products in this document meet the following standards:

	Approval Agency and Requirement
	UL60950-1 CAN/CSA-C22.2 No. 60950-1-03 EN60950-1 AS/NZS 60950.1
Electromagnetic Compliance	FCC CFR47 Part 15 Class A EN55022 Class A VCCI Class A AS/NZS CISPR22 Class A CNS 13438 Class A EN61000-3-2/3
Immunity	EN55024

U.S. Federal Communications Commission

RADIATED ENERGY

Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: Modifications or changes not expressly approved by the manufacturer or the FCC can void your right to operate this equipment.

Canadian Department of Communications

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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BSMI- A

EC Declaration of Conformity

We: **ALLIED TELESIS LABS LIMITED**
27 NAZARETH AVENUE
CHRISTCHURCH 8024
NEW ZEALAND

Declare under our sole legal responsibility that these products:

AT-PWR01, AT-PWR01-80, AT-PWR02, and AT-PWR05
Power Supply Units

Are in conformity with the essential requirements of directives:

- 2006/95/EC Low Voltage Directive including its amending directive 93/68/EEC
- 89/336/EEC Electromagnetic Compatibility (EMC) Directive including its amending directives 92/31/EC, 93/68/EEC and 2004/108/EC

with reference to the following harmonised standards:

- EN55022: 1998 including A1:2000 and A2:2003
  Information Technology Equipment-Radio disturbance
- EN55024: 1998 including A1:2001 and A2:2003
  Information Technology Equipment—Immunity characteristics—Limits and methods of measurement
- EN60950-1: 2001 including A11:2004
  Information Technology Equipment including electrical business equipment—General Requirements
- EN61000-3-2: 2000 including A2:2005
  Electromagnetic compatibility (EMC)—part 3-2: Limits for harmonic current emissions (equipment input current up to and including 16A per phase)
- EN61000-3-3: 1995 including A1:2001 and A2:2005
  Electromagnetic compatibility (EMC)—part 3-3: Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current up to 16A

Name: John Shields
On behalf of the Manufacturer

Position:
Vice President of Engineering

Signature:

Date of issue: 17 August 2007
Place of issue: 27 Nazareth Ave